ABSTRACT

An adaptive learning system and method ("ALS") for optimized, automated learning. The ALS includes the following interrelated learning methods; an optimal sequencing method, a perceptual learning method, and problem hinting method. The optimal sequencing method is adaptive in the sense that it continuously monitors a student's speed and accuracy of response in answering a series of questions, performing a series of classification tasks, or performing a series of procedures, and modifies the sequencing of the items presented as a function of these variables. One goal of the technique is to teach the subject matter in the shortest possible time. The ALS in one embodiment also includes a perceptual learning method which teaches a student to recognize particular invariant structural elements or features of a concept and to recognize the existence, or lack, of those invariant elements in other structures. The perceptual learning method also teaches students to map particular structures or patterns across different representations. This technique typically involves the use of complex visuospatial displays and typically includes many short trials at high speed to develop pattern recognition abilities, intuitions about structure and fluency. The perceptual learning method may be used in conjunction with the optimal sequencing method. The ALS further provides a hinting method which promotes learning by teaching students the connections between related types of problems and utilizes information about the learner's knowledge. The hinting method may be used in conjunction with the optimal sequencing and/or perceptual learning methods. The ALS may be used to teach a wide range of subjects and is particularly useful for teaching subjects which require an individual to recognize and rapidly react to complex multidimensional patterns and in teaching subjects in which there are large numbers of memorization items.